REMARKS

By this amendment, claims 1, 2, 10, and 11 have been revised to place this application in immediate condition for allowance. Currently, claims 1-3 and 10-12 are before the Examiner for consideration on their merits.

In the final rejection, the Examiner withdrew the current rejection and cited new prior art to reject the claims. That is, claims 2, 3, 11, and 12 stand rejected under 35 U.S.C. § 102(b) based on United States Patent No. 4,761,190 to Smith. Claims 1 and 10 are rejected under 35 U.S.C. § 103(a) based on Smith.

In the anticipation rejection, the Examiner contends that Smith teaches the same alloy and alleges that Smith also discloses substantially the same processing to make the alloy. By disclosing the same composition and substantially the same processing to make the alloy, the Examiner concludes that the claimed properties are inherently found in Smith.

In the obviousness rejection, the Examiner alleges that Smith teaches an alloy that overlaps the claimed alloy, and that this overlap establishes a *prima facie* case of obviousness.

In light of the changes to claims 1, 2, 10, and 11, it is respectfully submitted that Smith does not establish a *prima facie* case of obviousness against the pending claims.

In review, each of claims 1, 2, 10, and 11 have been revised to define a chromium range of 28-35%. Support for this change can be found on page 9, the second last line to page 10, line 2.

While this change is made in response to a final rejection, the arguments made herein are believed to clearly place the application in condition for allowance. Moreover, the changes to the claims do not raise any new issues that would require further consideration or search on the part of the Examiner. The principle argument that Smith does not teach a process that is substantially the same as Applicants that produces the claimed low angle boundary rate of 4% or more was previously made. Therefore, it should not require any burden on the Examiner to consider it again in the context of Smith and see that it is a distinguishing argument that overcomes the rejection.

By the revision to the claims defining the chromium content with a lower limit of 28%, the 12-30% Cr range of Smith cannot anticipate the claims and the rejection based on 35 U.S.C. § 102(b) is now moot. At most, the Examiner can only allege that Smith establishes a *prima facie* case of obviousness against the claims.

However, it is argued that Smith does not obviate the claims, and the arguments in favor of the patentability of the invention are set out below under the headings identifying the main point of the argument.

I. SMITH DOES NOT TEACH A PROCESS SUBSTANTIALLY THE SAME AS APPLICANTS' PROCESS

A. Solution Treatment

Critical to the Examiner's contention that the claimed low angle boundary is found in Smith is the contention that Smith's processing is substantially the same as the

processing employed by Applicants. This assumption is incorrect when closely examining the process of Smith and comparing it to that which is disclosed in the application to attain the claimed low angle boundary rate of 4% or more.

The claims state that the low angle boundary rate of 4% is achieved by a solution treatment at 900 °C or more. The Examiner cites the processing of Smith, i.e., "cold working at up to 80% followed by annealing (i.e. solution treatment) at 1038-1121 degrees C followed by using the product at 649-816 degrees C."

In this stance, the Examiner equates the claimed solution treatment at 900 °C or more to the annealing step of Smith. The "annealing" allegedly taught by Smith is fully explained in col. 3, lines 19-35. Smith discloses a critical final anneal following cold working of 20-80%, preferably 30-60%, which partially anneals the product but retains an additional 20-80% increase in the yield strength over that of the solution treated material. What this means is that the "annealing" of Smith is not a solution annealing as asserted in the rejection. The Smith annealing of the product is **not** a solution anneal since the product does not have the typical properties, i.e., yield strength, of solution annealed material. The increase in yield strength of 20-80% over that of a solution annealed material can only mean that the annealing of Smith is a partial annealing of the product, wherein only partial recrystallization occurs.

The argument that Smith does not teach a solution treatment is buttressed by the particular annealing conditions employed in the examples of Smith. In col. 3, lines 31 and 32, the annealing time is set at 10-90 seconds, which on its face is a short time duration. The three examples of Smith substantiate the observation that the time

period for annealing is very short, and cannot be considered to be a solution treatment. Example I anneals at 1950 °F for 26-43 seconds. Example II anneals at 1950 °F for 26 seconds, and Example III anneals at 1950-2000 °F (1066-1093 °C) for 43-48 seconds.

It is submitted that a fair reading of Smith given the short times of annealing and that the annealing must have a higher yield strength than a solution annealed material means that the "annealing" is a partial annealing which does not result in a complete recrystallization of the cold worked structure.

In contrast to the partial annealing processing of Smith, the specification explains that the solution treatment is a heat treatment normally carried out for recrystallization, see page 18, lines 5-9. Thus, the solution treatment of the invention is a recrystallizing solution treatment, which is not substantially the same as the partial final anneal (or partial recrystallization) of Smith.

It also appears that the Examiner is failing to appreciate the manner in which the low angle boundary rate of 4% or more is achieved in order to attain the improvements in corrosion resistance in the claimed nickel alloy. As explained in the specification, it has been discovered that alloys exhibiting a low angle boundary rate of 4% have enhanced intergranular stress cracking corrosion resistance. The specification also quite clearly demonstrates that the processing of the alloy is critical in attaining this property. For manufacturing method 1, Table I shows that the second level of cold working must be at a specified level or the low angle boundary rate of 4% or more is not achieved. For manufacturing method 2, Table 2 shows that the low angle boundary rate of 4% or more is only achieved when the formula value is 10 or more, see page 17, lines 1-7 for the

formula. These comparative studies shows that attaining the claimed low angle boundary rate of 4% or more is not easily achieved, even when the using a full solution annealing treatment.

The comparative evidence also shows that Smith is not relevant to the invention. Smith is concerned with a method of manufacturing heat resistant alloys for use in recuperators. Smith achieves this aim by control of the manufacturing process through a combination of intermediate annealing, final cold working by 20-80%, and a final anneal that retains a 20-80% increase in yield strength over that of a solution annealed material of similar composition, see claim 1, thereof. This is far afield from the aim of the invention, which is to improve the intergranular stress cracking corrosion resistance of nickel alloys.

The comparative evidence is further substantiation that the Examiner cannot continue to take the position that the claimed low angle boundary rate of 4% or more is inherently found when the processing of Smith is even more removed than the comparative examples employed in Tables 1 and 2.

Based on the arguments above, it is submitted that Smith does not teach substantially the same processing as the invention does to obtain the low angle boundary rate of 4% or more, and Smith cannot be relied upon to reject claims 1, 2, 10, and 11.

B. Carbide Precipitation Heat Treatment

Claims 10 and 11 also require a heat treatment for carbide precipitation after the solution heat treatment. In rejecting claims 10 and 11, the Examiner contends that the disclosure that the recuperator of Smith can be used in a temperature range of 649-816

°C is tantamount to the claimed carbide precipitation step. This is not a heat treatment step but a statement that the properties of the recuperator remain unchanged when subjected to such a temperature in operation. There is no disclosure of a time at temperature, any defined cooling, and any intent of carbide precipitation as a result of subjecting the alloy to such an operating temperature. Therefore, Smith cannot be interpreted to teach the additional carbide precipitation step set forth in claims 10-12, and the rejection is flawed for this reason.

There is also no reason that one of skill in the art would modify Smith and utilize such a heat treatment absent the use of hindsight. Smith teaches a specific heat treatment which is a partial recrystallization in order to obtain a yield strength of 20-80% higher than that achieved through a normal solution annealing. Given that Smith attains the goal of improved properties upon the final partial anneal, one of skill in the art would not be motivated to include another heat treatment that could alter the properties of Smith obtained through the partial final anneal.

SMITH DOES NOT ESTABLISH OBVIOUSNESS BASED ON SIMILARITY IN COMPOSITION

As a result of the amendment to claims 1, 2, 10, and 11, and specifying a chromium content of 28-35%, the question arises as to whether Smith's teachings of 12-30% chromium renders the alloy aspect of the claims obvious. It is submitted that considering the teachings of Smith would not lead one of skill in the art to a range of chromium of 28-35%. First, Smith exemplifies three amounts of chromium in Examples I-III, i.e., 21.6%, 21.8%, and 22.2% and none of these overlap the present claim ranges.

The alloy compositions found in col. 2, lines 13-15 also fall outside the claimed ranges of 28-35% Cr and either 40-70% or 40-80% Ni. INCONEL 601 has 21-25% Cr, INCONEL 617 has 20-24% Cr, INCONEL 625 has 20-23% Cr, and INCOLOY 800 has 19-23% Cr and 30-35% Ni.

The only disclosure the Examiner can rely upon to contend that the claim range of 28-35% Cr is obvious is the overall range of 12-30%. Applicants' contend that this range does not lead one of skill in the art to select a range of 28-35%, particularly when Smith's entire disclose focuses on levels of chromium that are below 25%.

As mentioned above, the advancement of Smith is in the processing of the alloys not the composition. This is made even clearer since the broad ranges of the alloying components of Smith are disclosed in the Background Art section of the patent, see col. 2, lines 5-10. What the Examiner would have one believe is that one of skill in the art would be motivated to arrive at the claimed ranges of claims 1, 2, 10, and 11 to improve obtain excellent resistance to intergranular stress cracking corrosion using the known alloying compositions recited in Smith. The lack of recognition of the problem of intergranular stress cracking corrosion in Smith and Smith's concern with improving the properties of recuperators through changes in the manufacturing method weigh against any conclusion of obviousness based merely on the disclosed and prior art composition of Smith.

CHANGES TO CLAIMS 1, 2, and 11

This amendment also corrects an oversight in the revisions made to claims 1 and 2 in the previous response and to make claim 10 consistent with claims 1, 2, and 11.

That is, claims 1 and 2 should read "formed as a result of solution treatment at 900 °C or more." This language is consistent with the arguments made with the July 14, 2006 amendment and with the language found in claim 11. Claim 10 is revised to clarify the solution treatment is at 900 °C or more as well.

SUMMARY

In light of the amendments to claims 1, 2, 10, and 11, Smith cannot establish a *prima facie* case of anticipation. In addition, it has been demonstrated that the processing of Smith is not substantially the same as that used to obtain the low angle boundary rate of 4% or more, and the position of inherency is flawed. In addition, Smith does not teach the carbide precipitation step of claims 10-12 and cannot establish obviousness for this reason. Lastly, there is no reason that one of skill in the art would arrive at the claimed composition with the improved resistance to stress cracking corrosion based on the general disclosure of known alloy compositions in Smith.

Accordingly, the Examiner is respectfully requested to examine this application in light of this Amendment, and pass all pending claims onto issuance.

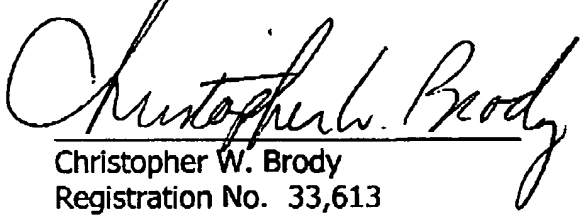
The above constitutes a complete response to all issues raised in the Office Action dated September 1, 2006.

If the Examiner believes that an interview would be helpful in expediting the allowance of this application, the Examiner is requested to telephone the undersigned at 202-835-1753.

Again, reconsideration and allowance of this application is respectfully requested.

Applicant respectfully submits that there is no fee required for this submission, however, please charge any fee deficiency or credit any overpayment to Deposit Account No. 50-1088.

Respectfully submitted,
CLARK & BRODY



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